

New Bedford Harbor
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To All Interested Parties:

You are cordially invited to attend a technology transfer session on a newly-developed solvent extraction technology. The technology uses liquid propane under pressure to extract complex organics, including PCBs, from contaminated sediments and sludges. If proven successful, this technology will provide an attractive alternative to incineration.

WHAT: Demonstration of New Technology - Solvent Extraction of PCBs from Sediments

WHERE: New Bedford Harbor Superfund Site
New Bedford, Massachusetts

WHEN: Friday, August 26th - 10 a.m. to 1 p.m.*
or Saturday, August 27th - 10 a.m. to 1 p.m.

BY WHOM: EPA Superfund Innovative Technology Evaluation Program (SITE)
and CF Systems Corporation, the developer

Each day will begin at the Buttonwood Library (745 Rockdale Avenue) in New Bedford. From 10:00-10:20, Richard Valentinetti (EPA-ORD) will give a slide presentation on the background, goals and objectives of the SITE program. From 10:20-10:45, John Moses (CF Systems) will give a slide presentation on the solvent extraction technology, past demonstration projects with the pilot-unit, and plans for the upcoming New Bedford Harbor Demonstration. After the session in the library, those who wish to see the unit in operation can drive a short distance to the demonstration site at the harbor. Weather and time permitting, a nonhazardous fabricated "waste" will be treated in the unit to demonstrate how the unit works.

The Friday session is set up for the convenience of local State and Federal officials. The Saturday session is set up for the convenience of the New Bedford community. Both sessions, however, are open to any interested parties. Information about the SITE Demonstration project was previously sent to the 600 parties on the EPA mailing list for the New Bedford Harbor site. It is hoped that, with this demonstration, more people will be encouraged to participate in decision-making for the eventual clean-up of the harbor.

This package contains:

- o a description of CF Systems Technology and their treatment unit
- o a map of the Massachusetts-Rhode Island area
- o a map of Providence, Rhode Island
- o a map of New Bedford, indicating the location of the Buttonwood Library and the demonstration site
- o hotel information for Providence and New Bedford.

* To confirm the date of the demonstration, or for further details, contact Kim Gotwals at (703) 827-8179 or Paul Knittel at (617) 565-1473.

TREATMENT PROCESS: Solvent Extraction with Liquefied Gas

DEVELOPER: CF Systems Corporation
Waltham, Massachusetts

GENERAL TECHNOLOGY DESCRIPTION

Liquefied gas (propane) at high pressure is used to extract oils and organics from sludges or sediments in a continuous process. Waste is extracted with the fluidized gas in pressurized vessels. The high pressure liquefies the gases, and the organic contaminants dissolve into the liquefied gas. When the extraction is complete, the liquids are separated, and the gases are evaporated from the organic liquid contaminants by reducing the pressure. The evaporated gases are recompressed, condensed, and recycled to the extraction vessels. Energy is conserved by using the heat generated by gas recompression and condensation to heat the gas evaporation step.

The technology is similar to the supercritical fluid extractions being developed by the food and drug industries. One method of decaffeinating coffee uses liquefied carbon dioxide. The gases are nontoxic and inexpensive, and special design provides for the construction of the high pressure vessels. Liquefied gases also provide improvements in extraction efficiency over some solvent extraction processes.

PILOT UNIT

A pilot (1 gpm) unit is available for the extraction of organics from sludges or sediments. Liquefied propane at 150°F and 100 to 300 psi is used to perform the extraction. In addition, CF Systems is building a full-scale (30 gpm) unit. The pilot-scale (1 gpm) sludge unit is mounted on one truck trailer. The trailer also contains a propane compressor and a cooling water system. A separate trailer contains a very small wet chemistry laboratory. The trailer can be ready to operate in two to three days. The system is operated on a continuous basis by two operators, and an additional operator can serve as a laboratory technician.

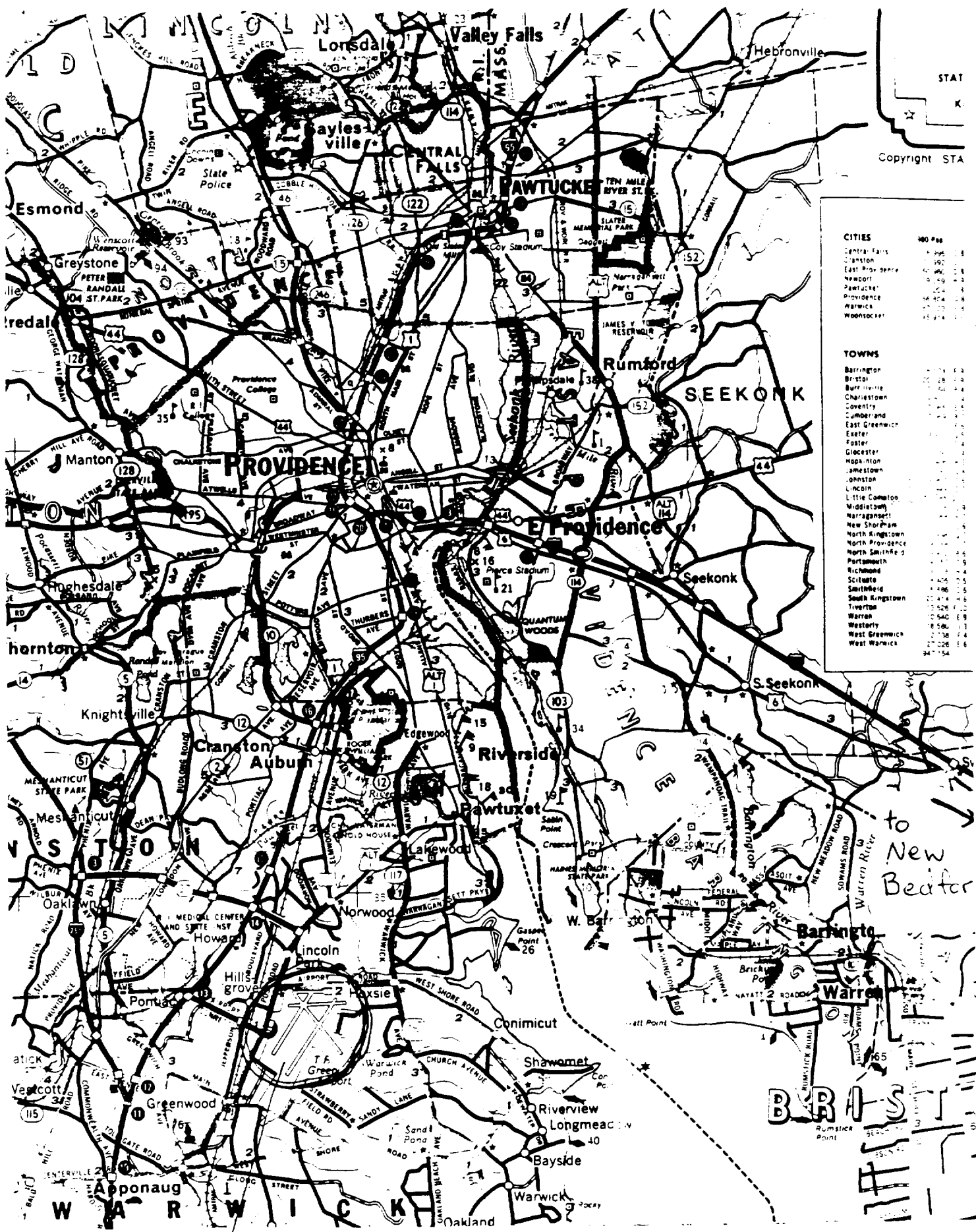
The byproduct of the system is a concentrated organic-liquid extract and the feed material residue. The concentrated organic liquid is composed of the organic compounds that are extracted from the waste, and maximum quantities can be predicted from feed composition. The residue contains the nonextracted material, which is mostly water and solids depending on feed composition.

WASTES TREATED

Dissolved and emulsified oils and organic solvents are extracted from sludges or sediments. Materials which are primarily contaminated only with heavy metals or inorganic compounds are not appropriate for this technology. A wide range of organic compounds are applicable, including:

carbon tetrachloride	phenol	toluene
chloroform	oil and grease	methyl acetate
benzene	furfural	acetone
napthalene	butyric acid	butanol
gasoline	dichloroethane	propanol
vinyl acetate	xylene	heptane
high molecular weight organic acids		
high molecular weight alcohols		

For the extraction of organics from sludges or sediments, water content up to 50 percent and oil concentrations up to 40 are acceptable. Oversized materials in the feed must be removed or ground, so that the waste can be pumped into the vessels against the extraction pressure. Pretreatment will be required if the waste is reactive with propane. Organic liquids cannot be extracted from dry soil at this time. CF Systems is developing a system which slurries solid wastes and soils with water so they can be pumped into the extraction vessel.



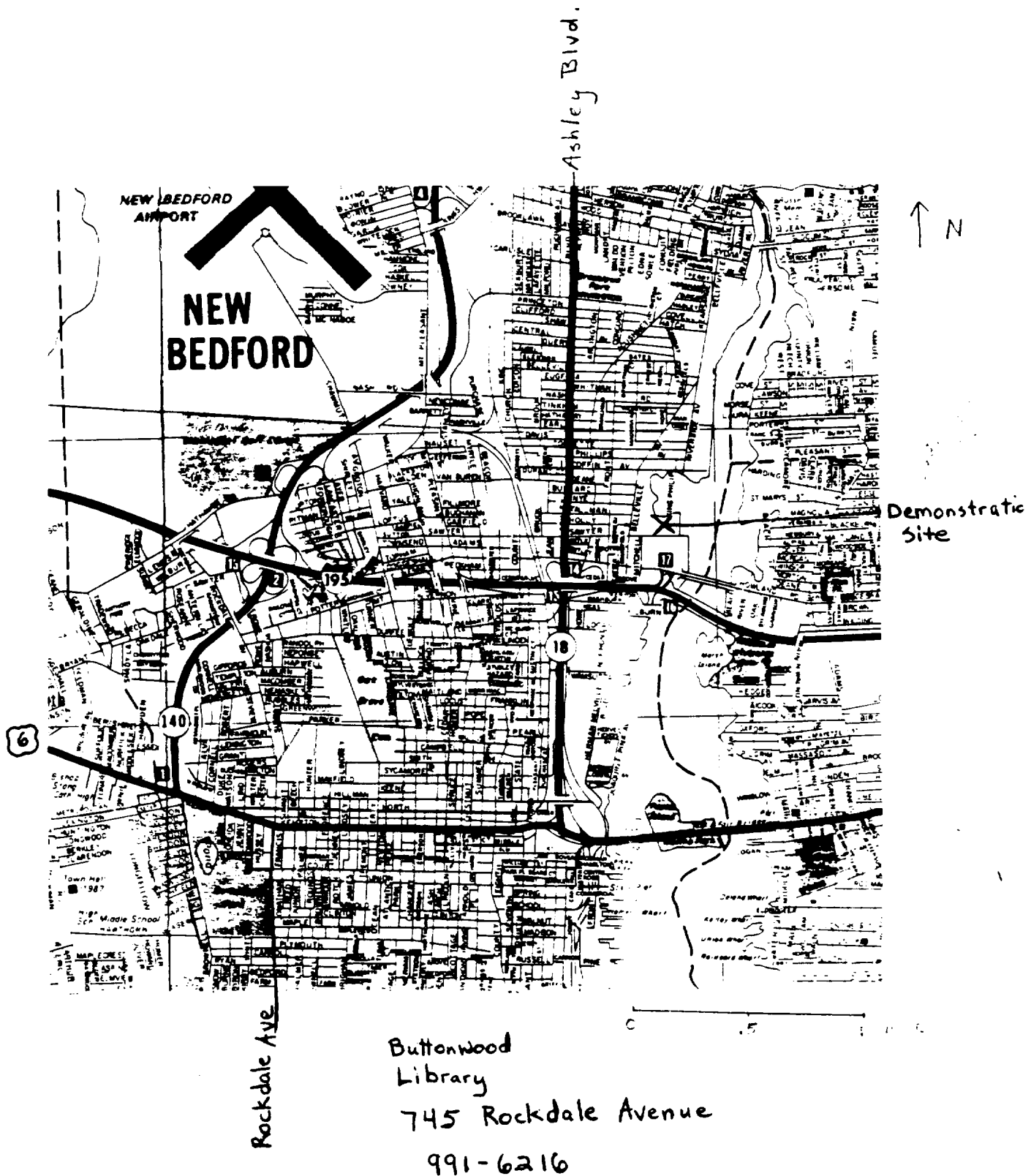
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CITIES		1900 Pop
Central Falls	1,495	1,495
Cranston	1,950	1,950
East Providence	4,000	4,000
Woonsocket	9,500	9,500
Pawtucket	12,500	12,500
Providence	14,400	14,400
Warwick	17,100	17,100
Woonsocket	18,700	18,700
TOWNS		
Barrington	1,100	1,100
Bristol	1,100	1,100
Burrillville	1,100	1,100
Charlestown	1,100	1,100
Coxeter	1,100	1,100
Cumberland	1,100	1,100
East Greenwich	1,100	1,100
Easter	1,100	1,100
Foster	1,100	1,100
Glocester	1,100	1,100
High North	1,100	1,100
Jamestown	1,100	1,100
Johnston	1,100	1,100
Lincoln	1,100	1,100
Little Compton	1,100	1,100
Middletown	1,100	1,100
Narragansett	1,100	1,100
New Shoreham	1,100	1,100
North Kingstown	1,100	1,100
North Providence	1,100	1,100
North Smithfield	1,100	1,100
Portsmouth	1,100	1,100
Richmond	1,100	1,100
Scituate	1,100	1,100
Smithfield	1,100	1,100
South Kingstown	1,100	1,100
Tiverton	1,100	1,100
Warren	1,100	1,100
Westport	1,100	1,100
West Greenwich	1,100	1,100
West Warwick	1,100	1,100
		24,154

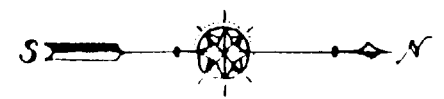
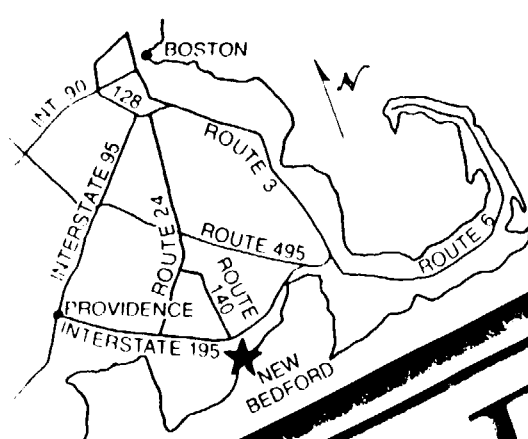
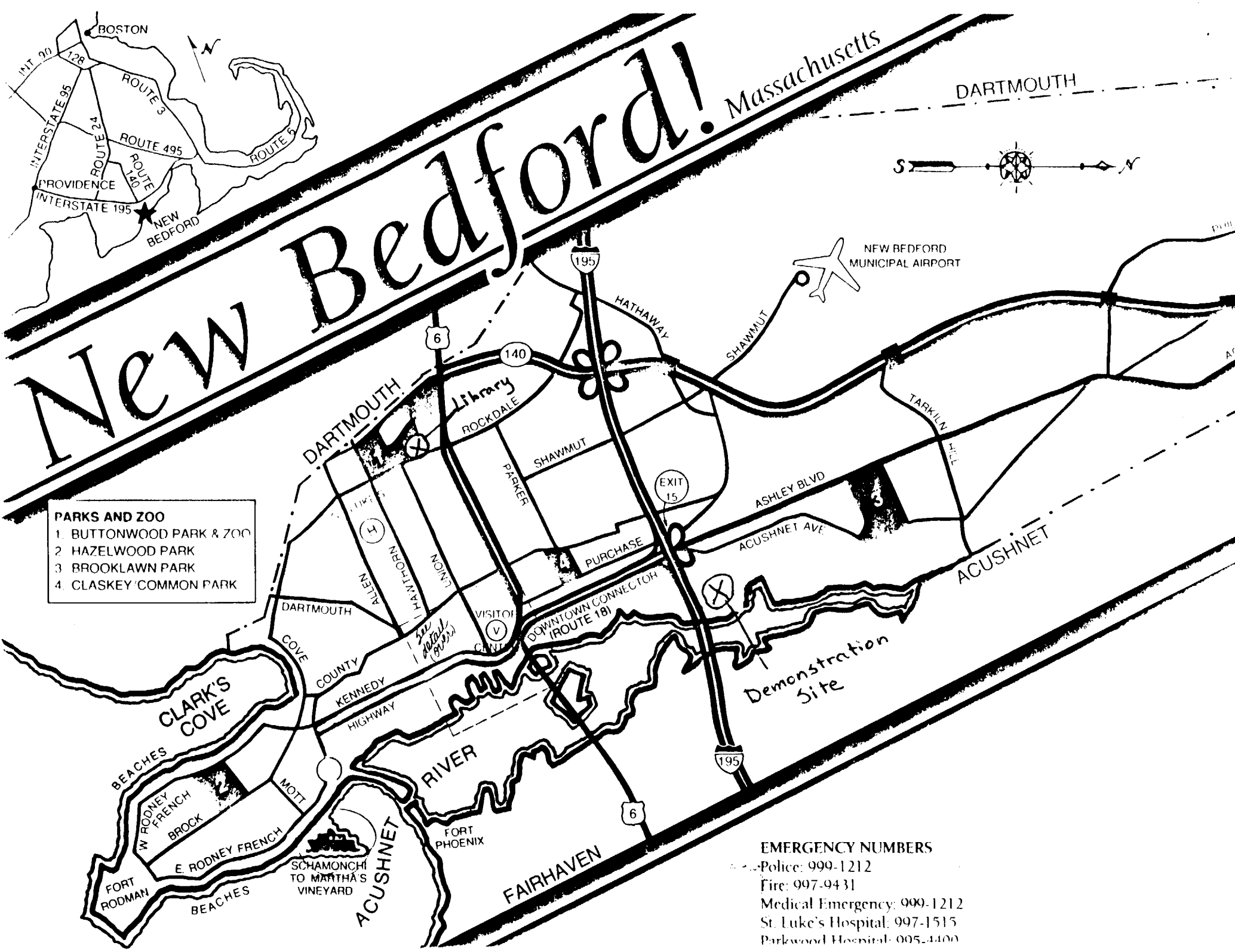
Airport

to New Bedford

B.R.I.S.T.



From 195,
Take 140 South
Left onto 6 East
Right at light onto Rockdale Ave
Library about $\frac{1}{4}$ mi. down Rockdale Ave., on the right.



- PARKS AND ZOO**
1. BUTTONWOOD PARK & ZOO
 2. HAZELWOOD PARK
 3. BROOKLAWN PARK
 4. CLASKEY COMMON PARK

EMERGENCY NUMBERS

Police: 999-1212
Fire: 997-9431
Medical Emergency: 999-1212
St. Luke's Hospital: 997-1515
Parkwood Hospital: 005-4400

HOTELS

<u>Name</u>	<u>Government Rate</u>	<u>Distance from Green Airport</u>
<u>Providence Area:</u>		
o Garden City Inn 101 New London Avenue Cranston, R.I. (401) 942-4200	41.40 + tax	10 min.
o New Yorker Motor Lodge 400 Newport Avenue East Providence, R.I. (401) 434-8000	48.00 + tax	16 miles, 25 min.
o Ramada Inn 940 Fall River Avenue Seekonk, MA (617) 336-7300 (800) 272-6232	55.00 + tax	20 miles 30 min.
o Susse Chalet Inn 36 Jefferson Blvd. Warwick, R.I. (401) 941-6600 (800) 258-1980	38.70 + tax	2 miles 5 min.
o Holiday Inn of Providence 21 Atwells Avenue Providence, R.I. (401) 831-3900 (800) 238-8000	64.00 + tax	15 min.
o Omni Biltmore Hotel Kennedy Plaza Providence, R.I. (401) 421-0700 (800) 843-6664	70.00 + tax	10 miles
<u>New Bedford Area:</u>		
o Comfort Inn 171 Faunce Corner Road North Dartmouth, MA (617) 996-0800	49.00 + tax	1 hr., 15 min.
o Skipper Motor Inn 110 Middle Street Fairhaven, MA (617) 997-1281	41.00 + tax	40 min.